

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

WHIRLPOOL CORPORATION and
WHIRLPOOL PATENTS COMPANY,

Plaintiffs and Counter-defendants,

File No. 1:04-CV-100

v.

HON. ROBERT HOLMES BELL

LG ELECTRONICS, INC.,

Defendant and Counter-plaintiff,

LG ELECTRONICS, U.S.A., INC.,

Defendant, and

GENERAL ELECTRIC COMPANY,

Defendant and Counter-plaintiff.

OPINION

Plaintiffs Whirlpool Corporation and Whirlpool Patents Company (collectively "Whirlpool") filed this action against Defendants LG Electronics, Inc. and LG Electronics U.S.A., Inc. (collectively "LG"), and General Electric Company ("GE"), seeking injunctive relief and damages for patent infringement. Whirlpool is the owner of U.S. Patent No. 6,212,722 entitled "Apparatus and Method for Rolling Clothes in an Automatic Washer" ("the '722 patent"), and U.S. Patent No. 4,784,666 entitled "High Performance Washing Process for Vertical Axis Automatic Washer" ("the '666 patent"). Whirlpool contends that

the GE Profile Harmony Model No. WPGT9350 and the GE Profile Harmony Model No. WPGT9360 (together referred to as the "Harmony") manufactured by LG and sold by GE infringe both of these patents. GE and LG have counterclaimed for a judgment of non-infringement and invalidity of patents.

This matter is currently before the Court on Defendants' motion for summary judgment No. 3 asserting invalidity of the '722 patent in view of prior art (Docket # 274) and Whirlpool's cross-motion for partial summary judgment of validity of the '722 patent (Docket # 283).

I.

Even if a patent has been issued by the Patent and Trademark Office ("PTO"), it may be challenged as invalid if it was anticipated by the prior art, 35 U.S.C. § 102,¹ or if it was obvious in light of the prior art, 35 U.S.C. § 103.² Patents are presumed to be valid and the

¹A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States

35 U.S.C. § 102.

²A person is also not entitled to a patent "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a).

burden of proving invalidity rests on the party asserting invalidity. 35 U.S.C. § 282. "To overcome this presumption of validity, the party challenging a patent must prove facts supporting a determination of invalidity by clear and convincing evidence." *Schumer v. Lab. Computer Sys., Inc.*, 308 F.3d 1304, 1315 (Fed. Cir. 2002) (citing *Apotex USA, Inc. v. Merck & Co.*, 254 F.3d 1031, 1036 (Fed. Cir. 2001)).

Typically, testimony concerning anticipation must be testimony from one skilled in the art and must identify each claim element, state the witnesses' interpretation of the claim element, and explain in detail how each claim element is disclosed in the prior art reference. The testimony is insufficient if it is merely conclusory.

Schumer, 308 F.3d at 1316.

Invalidity on the ground of "anticipation" requires lack of novelty of the invention as claimed. The invention must have been known to the art in the detail of the claim; that is, all of the elements and limitations of the claim must be shown in a single prior reference, arranged as in the claim.

Karsten Mfg. Corp. v. Cleveland Golf Co., 242 F.3d 1376, 1383 (Fed. Cir. 2001).

"Although anticipation is a question of fact, it still may be decided on summary judgment if the record reveals no genuine dispute of material fact." *Telemac Cellular Corp. v. Topp Telecom, Inc.* 247 F.3d 1316, 1327 (Fed. Cir. 2001) (citing *General Elec. Co. v. Nintendo Co., Ltd.*, 179 F.3d 1350, 1353 (Fed. Cir. 1999)). Summary judgment is appropriate if "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." FED. R. CIV. P. 56(c). On summary judgment, the court draws all justifiable inferences in favor of the non-movant.

Schumer, 308 F.3d at 1315 (citing *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986)).

It is more difficult to establish that a patent is invalid when using art that was before the Examiner, as the challenger has the added burden of showing that the PTO was wrong in its decision to grant the patent. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984). On the other hand, when the challenger produces prior art or other evidence not considered in the PTO there is "no reason to defer to the PTO so far as its effect on validity is concerned. Indeed, new prior art not before the PTO may so clearly invalidate a patent that the burden is fully sustained merely by proving its existence and applying the proper law." *Id.* at 1359-60.

II.

Whirlpool filed its application for the '722 patent on July 13, 1999, and the patent was issued on April 10, 2001. The inventors of the '722 patent are Robert J. Pinkowski, Kathleen M. LaBelle, and Matthew Craig Parsons. Whirlpool alleges that claims 1-6, 8-11, 13-14, 16-19, 21, 25, 27-29, and 31 of the '722 patent are infringed literally or under the doctrine of equivalents by the Harmony. (Docket # 26).

The structure of the washing machine claimed in the '722 patent includes a vertical axis automatic washer having a wash chamber and an impeller. '722 patent, cl. 1. These structures are all found in the prior art. In fact, one of the inventors of the '722 patent testified that the invention would work in almost any impeller washer. (Pinkowski Dep. at

243). According to Whirlpool, it is the controls or water level that distinguishes the invention from prior art (not the structure of the washing machine). (Pinkowski Dep. at 243-44).

The '722 patent is largely based upon the alleged novelty of inverse toroidal movement:

The present invention is directed to a unique wash system and method of operating a washer wherein cloth items within the washer are moved in a unique inverted or inverse toroidal rollover manner.

'722 patent, col. 4, ll.18-21. The abstract of the '722 patent describes inverse toroidal movement as follows:

Cloth items move radially inward along the impeller, move upwardly in the center of the wash chamber, move radially outwardly along the top of the wash chamber and move downwardly along the side wall of the wash chamber in a pattern which may be referred to as an inverse toroidal rollover path or pattern.

'722 patent, Abstract.

This inverse toroidal rollover pattern of cloth motion is surprising and counter-intuitive in view of the prior art It would therefore be expected that the clothes adjacent the impeller would be urged to move radially outward – not inwardly as the present invention teaches.

'722 patent, col. 5, lines 29-38.

Whirlpool acknowledges that inverse toroidal movement is "at the heart of the claimed invention." (Docket # 126, Pl. Br. re Claim Constr. at 3). The patent examiner granted the application on the basis of Whirlpool's representation that the prior art failed to show inverse

toroidal movement. In allowing the claims in Whirlpool's patent application, the patent examiner explained:

The primary reason for allowance of claims 1-21 is the inclusion of a step in each of claims 1, 8, 14, and 17 that provides an inverse toroidal rollover path for the items. Correspondingly, the primary reason for allowance of claims 25-31 is the inclusion in claims 25 and 28 of means that causes an inverse toroidal rollover path for the items.

('722 file history at LGE000475).

Defendants contend the '722 patent is invalid because inverse toroidal movement was well-known in Asia for years before the '722 patent application was filed. According to Defendants, regardless of whether Whirlpool knew of the prior invention, the invention has been in the public domain for years and is free to be used by all. In support of their invalidity motion Defendants rely primarily on a Hitachi application and a Daewoo washing machine, both of which predated Whirlpool's application for the '722 patent. Neither the Hitachi application nor the Daewoo machine was disclosed to the PTO during the application process for the '722 patent. (Def. Ex. 24, '722 file history at LGE000468).

Whirlpool contends that neither the Hitachi application nor the Daewoo machine constitute invalidating prior art because they do not disclose the '722 patent limitations of 1) inverse toroidal cloth motion caused by drag forces, 2) impeding angular movement in the drop zone beyond the outer periphery of the impeller, or 3) relative angular motion between the cloth items in the drop zone and on the impeller.

A. HITACHI APPLICATION

Defendants have produced a Hitachi patent application that was filed in 1992 and published in 1994 that disclosed cloth movement identical to the inverse toroidal movement described in Whirlpool's '722 patent. (Hitachi Unexamined Patent Application No. H6-114189, Def. Ex. 27).

The Hitachi application "relates to a washing machine in which the upper and lower clothes can effectively change places, and more particularly to a washing machine in which washing irregularities or cloth twisting are greatly reduced." (Hitachi, Description of Invention, ¶ 1). The Hitachi application describes the cloth movement as follows:

the cloth in the central portion of the washing tank is pushed upward, spread to the outer peripheral portion on the upper surface, then moved down along the tank wall, and then collected in the central portion.

Hitachi appl., cl. 1.

The '722 patent's description of inverse toroidal rollover describes the same movement:

inverse toroidal rollover is meant to refer to the general motion of cloth items along a path which is upwardly in the center of the wash basket **42**, outwardly along the top of the cloth item load, downwardly along the side wall **42s** of the basket **42** and inwardly along the bottom of the basket **42** adjacent the impeller **40**.

'722 patent, col. 5, ll. 16-21.

The illustrations in Figure 5 of the '722 patent and in Figure 3 of the Hitachi patent both depict the same movement of the cloth items up the center of the tank, out to the wall, down along the tank wall, and then again to the center.

Tamotsu Shikamori, one of the inventors of the Hitachi application, and an expert witness for Defendants, explained that the invention described in the Hitachi application caused the cloth items in the machine "to move in the manner the '722 patent described as an 'inverse toroidal path.'" (Def. Ex. 36, Shikamori Rpt. at 4).

There can be no dispute that the Hitachi application describes the same phenomenon of inverse toroidal movement that the Whirlpool '722 patent describes. Defendants have offered additional evidence that inverse toroidal movement was recognized by LG in 1995 and by Toshiba in 1990. (Def. Ex. 28, 29).³ Clearly, inverse toroidal movement, which was the primary reason for allowance of the '722 patent claims, was already the subject of prior art.

³The LG patent describes a movement of the laundry, where the laundry in the lower part of the exterior of the tub is driven to the lower part of the center, rises up the upper part of the center, moves to the upper part of the exterior, and then comes down back to the lower part of the exterior of the tub. (Def. Ex. 28). "In such circular process, the laundry is washed by causing friction among the laundry as well as with the interior wall of the washer-dryer tub (1) and the surface of the rotary wings (2)." (Def. Ex. 28 at 2). The Toshiba patent also describes inverse toroidal movement: "the laundry is pushed up near the center of the stirrer and in turn, the laundry near the periphery of the washing tank is drawn down to the bottom." (Def. Ex. 29 at 3).

Whirlpool does not deny that the Hitachi application is prior art. Neither does Whirlpool deny that the Hitachi application discloses inverse toroidal cloth movement using structure that corresponds to the '722 patent. Instead, Whirlpool contends that even if inverse toroidal movement was disclosed in the Hitachi application, the manner in which inverse toroidal movement was achieved in the '722 patent is not disclosed in the prior art.

1. Dragging

Whirlpool contends that its invention is distinguishable from the prior art represented by the Hitachi application because the Hitachi application achieves inverse toroidal movement by fluid flow only, while the '722 invention achieves it by dragging. According to Whirlpool's expert, Gerald Duncan,

it was not well known, and in fact, it was counter-intuitive and against conventional thinking, to use low water wash conditions that resulted in the clothes being dragged by the impeller and moved in an inverse toroidal manner. It is this inverse toroidal movement caused by drag forces – not simply inverse toroidal movement – that the inventors claimed was their invention and that the Patent Office correctly understood to be patentable over the prior art.

(Pl. Ex. 23, Duncan Supp. Rpt. at 14).

The Court is not convinced that the PTO distinguished the '722 patent on the basis that it caused inverse toroidal movement by dragging. Nevertheless, the '722 patent discloses that cloth items above the impeller are "dragged in an oscillatory manner," '722 patent, cls. 1, 8, 17, 25, 28, are "dragged by the impeller along an arc-like path," '722 patent, cls.2, 18, and that the amount of wash liquid is "less than the quantity of wash liquid at which the cloth

items lose frictional engagement with the cloth items directly above the impeller wherein the cloth items cannot be readily dragged by the impeller." '722 patent, cls. 6, 10.

Whirlpool contends that the inverse toroidal movement of the cloth items in the Hitachi application is caused by fluidic forces rather than by dragging. Whirlpool's assertion is not supported by the evidence of record.

During claim construction this Court construed the term "dragged" in Claims 1, 2, 6, 8, 10, 17, 18, 25, 28 as "pulled with friction." (November 8, 2005, Opinion and Order, Docket #'s 254 & 255). The inverse toroidal cloth movement in both the Hitachi and the '722 patent is attributed to the same cause – frictional contact between the impeller and the cloth items.

The '722 patent explains that "an inverse toroidal rollover pattern is created by direct contact between the oscillating impeller and the cloth items supported above the impeller." '722 patent, Abstract. "[T]o effectively operate an automatic washer to achieve the inverse toroidal motion, the cloth items in the lower transfer zone LT_z must remain generally in contact with the impeller **40**." '722 patent, col. 10, lines 5-8.

In like fashion, the Hitachi application explains that the same pattern of cloth movement is created when "the blade of the impeller acts directly upon a cloth." (Def. Ex. 27, Hitachi, Scope of Patent Claims, Claim 1). The Hitachi application explains that "because the cloth reliably passes by the blade surface of the impeller, the entire cloth can receive uniformly the mechanical force of the impeller." (Hitachi, Detailed Description of

the Invention ¶ 6). Also, "[b]ecause of the above-described cloth switching, the cloth is brought into uniform contact with the blade 8 of the impeller 13. Therefore, the mechanical force thereof can be received in a regular fashion." (Hitachi, Description of Invention, ¶ 18).

Matthew Parsons, one of the Whirlpool '722 inventors, could not identify any material difference between the Hitachi and the asserted claims of the '722. According to Parsons, although the Hitachi application does not use the term "dragging," "it describes the clothes moving in the same manner as the '722 patent." (Parsons Dep. at 187). He agreed that the Hitachi application disclosed the impeller contacting the cloth items and thereby providing a frictional force on the cloth items." (Parsons Dep. at 199). He testified that "cloth items above the impeller being dragged" was not a new feature in the art," and that the Hitachi application appeared to describe the same feature." (Parsons Dep. at 183-84). Parsons clarified for the record that he was not aware of the Hitachi application when he made the application for the '722 patent. (Parsons Dep. at 181-82).

Whirlpool contends that Parson's testimony is not entitled to much weight because he only has a two year drafting degree and was not one of the major inventors of the '722 patent.

Parsons has been at Whirlpool since 1989 and has worked closely in the Global Laundry/Fabric Care Department with inventor Pinkowski since 1995. (Parsons Dep. at 7-8, 11-12, 193-95). Parson's testimony, standing alone, might not be entitled to great weight, but it is confirmed by inventor Pinkowski, who testified that the only way to achieve inverse toroidal movement in an impeller washing machine is through dragging and that there can

be no inverse toroidal movement when frictional engagement between the clothes and the impeller is lost. (Pinkowski Dep. at 258 & 269).

Whirlpool's current assertion that inverse toroidal movement is caused by fluid flow is contrary to the representations in the '722 patent and the representations of Whirlpool's experts and inventors. The '722 patent explains that in a deep fill impeller washer the clothes move in a toroidal pattern along with the flow of the wash liquid. '722 patent, col. 1, l. 60 - col. 2, l. 1. Inventor LaBelle testified that she had never seen an impeller washer that achieved inverse toroidal motion by fluidic forces. (LaBelle Dep. at 156). Inventor Pinkowski explained that one could not use an impeller to move water in an inverse toroidal motion. "Any water on the impeller is moving radially outwards, peripherally outward." (Pinkowski Dep. at 179). Pinkowski does not know of any means of changing an impeller or agitator to cause the water to flow in an inverse toroidal manner. (Pinkowski Dep. at 179). Defendants' expert, Dr. Sundell, could not think of any washer which would use fluid to move clothes in an inverse toroidal motion. (Sundell Dep. at 83). Whirlpool's expert Duncan testified that he had never seen an operating machine that caused clothes to move in an inverse toroidal manner by fluid forces. (Duncan Dep. at 202). According to Pinkowski, the only way to achieve inverse toroidal movement in an impeller machine is through dragging, and there can be no inverse toroidal movement when frictional engagement is lost. (Pinkowski Dep. at 258 & 269). Whirlpool's expert, Dr. Caligiuri, testified that if you lose frictional contact between the cloth items and the impeller due to a lot of water in the

machine, then the clothes will move in a regular toroidal action because the water flows in a regular toroidal pattern. (Caligiuri Dep. at 49-50). According to Dr. Caligiuri, when the cloth items and the detergent solution move in opposite directions, it is clear that the cloth items are not moving in response to fluid power.

Instead, a non-fluid force, such as a frictional dragging force, must exceed the force of fluid flow, allowing the cloth items to be dragged inward toward the center of the wash chamber in an arc-like fashion, which is precisely the mechanism that is described in the '722 patent for producing inverse toroidal rollover motion of the cloth items.

(Caligiuri Supp. Rpt. at 55; Caligiuri Dep. at 170-71).

Notwithstanding the clear evidence in the Hitachi application that the cloth items are dragged by the impeller, Whirlpool contends that the Hitachi application makes unequivocal references to using fluid power to move clothes. The "unequivocal" references Whirlpool relies on are the following: "the cloth reliably passes by the blade surface," ¶ 6; "cloth moves by inertia in a forward-backward operation," ¶ 12; "the impeller 13 temporarily stops in order to start backward rotation, but the cloth at this time continues rotating in the forward direction due to inertia," ¶ 17; and "the cloth in the outer peripheral portion is drawn to the central portion by the outer peripheral portion of the impeller 13, sequentially moves down, reaches the outer peripheral portion of the impeller 13, and repeatedly circulates," ¶ 17. (Hitachi application). Although Whirlpool's expert, Gerald Duncan, acknowledges that the Hitachi application appears to suggest using less water than a conventional impeller machine, he contends that each of these statements makes it clear that the force behind moving the

clothes in the Hitachi application is fluidic in nature, and not the result of drag forces. (Ex. 23, Duncan Rpt. at 15-16).

Contrary to Whirlpool's assertions, the phrases Whirlpool focuses on – "passes by," "inertia," "drawn," and "circulates" – are not unequivocal references to fluid power. None of these phrases excludes dragging. Most importantly, none of these somewhat ambiguous references is sufficient to contradict the Hitachi application's express teaching that "the blade of the impeller acts directly" on the cloth items. (Hitachi, Scope, Claim 1). Even if, as Duncan contends, these words suggest some fluidic forces at work (Duncan Supp. Rebuttal Rpt. at 16), that fact would not defeat the presence of drag forces as well, and it would not distinguish the Hitachi application from the '722 patent.

Whirlpool contends that the declaration of the first named inventor on the Hitachi application, Soichi Fukuzawa, regarding the nature of the operation of the patent, shows that the cloth movement is caused by fluidic forces rather than by dragging.

Dr. Fukuzawa's declaration is also not as clear on this point as Whirlpool would suggest. Dr. Fukuzawa merely noted that when the impeller stops, the clothes continue to move forward "due to inertia." (Fukuzawa Decl. ¶ 4).

Even if Dr. Fukuzawa's reference to inertia is a recognition that fluid forces play a role in the Hitachi application, that would not defeat a finding that the Hitachi application teaches dragging by the impeller as the primary force for moving the cloth items. The '722 patent does not exclude the operation of some fluid force on the cloth items. It merely provides that

"fluid pumping or fluid power is **not the major drive** used for moving cloth items in the wash chamber." '722 patent, col. 3, ll. 6-8 (emphasis added).

The '722 patent recognizes that the amount of water introduced into the wash tub is an important factor in practicing the invention. ('722 patent, col. 8, ll. 41-42). The '722 patent does not, however, call for a specific water to cloth ratio. The '722 patent merely discloses that if wash liquid is introduced to a degree that the cloth items are allowed to float in the wash basket, the impeller will not sufficiently frictionally engage the cloth items to drag the cloth items along an arc-like path. '722 patent, col. 8, ll. 51-55. Thus, claims 8 and 9 of the '722 patent describe supplying a quantity of wash liquid sufficient to wet the cloth items, but insufficient to cause the impeller to lose frictional engagement with the cloth items. *See also* '722 patent, Fig. 8 ("too much water, clothes lose contact with impeller"). Kathleen LaBelle, one of the inventors of the '722 patent, testified that she had observed inverse toroidal movement occurring in deep-fill washers. (LaBelle Dep. at 52-53).

Whirlpool contends that the Hitachi uses too much water to permit the clothes to contact and be dragged by the impeller. This assertion lacks evidentiary support. The Hitachi application, like the '722 patent, recognizes the effect of water level on inverse toroidal movement. The Hitachi explains that the water level and the rotation time of the impeller are "controlled so as to obtain constantly the same cloth movement." (Hitachi, Scope of Patent Claims, Claim 3). The Hitachi application indicates that the water to cloth ratio is 10 or less. (Hitachi, Abstract, Configuration and Scope of Patent Claims, Claim 4).

The Hitachi application also includes a graph that correlates water level to the number of cloth rollovers and explains that "the number of place changes of the cloths shown in FIG. 4 decreases with the increase in water level." (Hitachi at ¶ 16). The Hitachi application's disclosure that the number of rollovers decreases as water volume increases defeats Whirlpool's argument that Hitachi moves cloth by fluid. Instead, this disclosure is consistent with Hitachi's application's teaching that the blade acts directly on cloth, thereby dragging the cloth by friction as it oscillates.

Hitachi inventor Dr. Fukuzawa also noted that "[t]he water level used in my patent application cannot be so high that the clothes are floating too far above the impeller. If the water level used is too low, however, the wash process and clothes movement described in my patent application will not work." (Fukuzawa Decl. ¶ 9). According to Hitachi inventor Shikamori, the Hitachi application "purposefully used a low water-to-laundry item ratio and specified ranges of on-and-off times for the motor," in order to cause inverse toroidal movement. (Def. Ex. 36, Shikamori Rpt. at 4). Shikamori explained that impeller washing machines can cause the cloth items to move in an inverse toroidal path when the water-to-laundry item ratio is relatively low, because the oscillating impeller can physically pull on the laundry items and apply a moving force to the laundry items, drawing them inward at the bottom of the machine. When they are drawn into the center of the machine, they move upward. (Def. Ex. 36, Shikamori Rpt. at 4).

The Court concludes that contrary to Whirlpool's assertions, the clear and convincing evidence reveals without question, that the Hitachi application, like the '722 patent, achieves inverse toroidal movement by dragging.

2. "Impeding the Angular Movement" and "Relative Angular Motion"

In a final effort to preserve the validity of at least some of the claims of the '722 patent, Whirlpool has filed a cross-motion for partial summary judgment requesting a finding of validity for those claims that include the limitations "impeding the angular movement" or "relative angular motion" because these claim limitations were not disclosed in the prior art. The claims for which Whirlpool seeks a finding of validity are claims 2-5, 11, 13, 14, 16, 18, 19, 21, 28, 29, and 31.

Claim 3 recites in pertinent part:

impeding the angular movement of the cloth items in the drop zone such that **relative angular motion** is created between the cloth items in the drop zone and the cloth items in the lower transfer zone such that cloth items in the wash basket move along an **inverse toroidal path**.

'722 patent, cl. 3 (emphasis added). Claims 11 and 28 recite in pertinent part:

impeding the angular movement of the cloth items disposed along the periphery of the impeller such that **relative angular motion** is created between the cloth items disposed along the periphery of the impeller and the cloth items disposed immediately above the impeller.

'722 patent, cls. 11 & 28 (emphasis added).

Claims 13 and 16 recite in pertinent part:

balancing the forces applied to the cloth items above the impeller and the forces applied to cloth items disposed along the periphery of the impeller such

that **relative angular motion** is created between the cloth items above the impeller and the cloth items disposed along the periphery of the impeller wherein cloth items are driven to move along an **inverse toroidal path** in the wash basket.

'722 patent, cls. 13, 16 & 31 (emphasis added).

Claim 21 recites in pertinent part:

balancing the forces applied to the cloth items within the drop zone and the lower transfer zone such that **relative angular motion** is created between the cloth items in the drop zone and the cloth items in the lower transfer zone such that cloth items in the wash basket move along an **inverse toroidal path**.

'722 patent, cl. 21.

Clearly, the claims teach that the relative angular motion is a consequence of the impeding.

During the claim construction phase of this litigation the Court accepted Whirlpool's assertion that "a plurality of protrusions" is the corresponding structure that performs the function recited in Claim 28 of impeding the angular movement of the cloth items such that relative angular motion is created between the cloth items. (Docket # 126, Pl.'s Claim Constr. Br. at 13).

Whirlpool's motion for partial summary judgment is largely based on Defendants' expert Dr. Sundell's admission that he has not seen any disclosure of impeding angular movement or relative angular motion in the prior art. (Sundell Dep. at 157, 185). Sundell testified that these terms are vague because they do not indicate how much, what is needed, or what causes it. (Sundell Dep. at 157). He also testified that the '722 patent claim of

impeding the motion outside the impeller by the grommet or protrusion is a red herring because it does not adequately describe the phenomenon. (Sundell Dep. at 157, 183). Most of the time the protrusions are simply structural support for the basket. (Sundell Dep. at 213-15). Nevertheless, Dr. Sundell opined that the geometries in the prior art and the phenomena they created were the same. (Sundell Dep. at 186).

The specifications for the '722 patent indicate that the inventors were not certain about what structure performed the impeding function, and they recognized that protrusions may not in fact be necessary to the function of impeding angular motion:

The shape of the wash basket **42** may have some impact on the above stated basic operating principle. Specifically, **it appears important** to set up forces which have a tendency to hold the cloth items in the lower drop zone D_z , stationary. To that end, a plurality of protrusions **70** are provided along the bottom corner of the wash basket **42**. While these protrusions **70** are not required, **it is believe[d]** that they increase the resistance to angular or rotational motion of the cloth items **20** in the drop zone D_z , such that the cloth items in the drop zone D_z , do not move with the impeller in an arc-like path thereby setting up the radially inward motion.

'722 patent, col. 7: 13-25 (emphasis added). *See also* '722 patent, figures 9, 10, 12-15.

Pinkowski, one of the '722 patent inventors, testified that his recent experimentation has revealed that it makes no difference whether or not there were protrusions in the impeller machine. (Pinkowski Dep. at 87). Pinkowski's discovery is consistent with Sundell's testimony.

Whirlpool's expert Duncan testified that there could be inverse toroidal movement without protrusions, and that such an embodiment would still impede the angular movement

of the cloth items in the drop zone because of the weight of the clothes and the frictional interaction between the basket and the clothes. (Duncan Dep. at 133).

Whirlpool's expert, Dr. Caligiuri, testified that impeding the cloth items in the drop zone creates the relative contact between the clothes and the impeller, which generates the friction forces, which pulls clothes in the inverse toroidal motion, and results in the relative angular motion of the clothes in contact with the impeller versus the clothes in the drop zone. (Caligiuri Dep. at 156). Dr. Caligiuri explained that there must be impeding of the cloth items in the drop zone "because if there is no impediment to the movement of the clothes in the drop zone, then the clothes in the drop zone would just move with the clothes in the lower transfer zone, and there would be no net relative motion to create the frictional forces which are pulling the clothes into the inverse toroidal motion." (Caligiuri Dep. at 156.)

Dr. Caligiuri found impeding the angular movement and relative angular motion in the accused Harmony machine as follows:

Because of the fact that there is frictional contact between the cloth items and the impeller and that there is inverse toroidal motion, **means that there must be relative angular motion** between the impeller and the wash basket, the clothes in the impeller and the clothes in the wash basket, as was done in the supplemental report, and this is verified by the subsequent analysis of the radial sensor data.

(Caligiuri Dep. at 168-69) (emphasis added). In other words, according to Whirlpool's own expert, frictional contact between the cloth items and the impeller, together with inverse toroidal motion, result in angular motion of the cloth items.

The Hitachi application does not explicitly reference impeding the angular movement or relative angular motion, and the Hitachi application does not reference protrusions. (Sundell Dep. at 185, 213). The Hitachi does, however, describe a balancing of forces to promote cloth movement without twisting or cloth damage:

It was experimentally found that specifying the ratio of the weight of water in a washing tank to the cloth weight, that is, the bath ratio, and the range of forward-backward rotation time of the impeller makes it possible to generate a cloth movement such that . . . the impeller pushes upward the cloth located at the central portion of the washing tank, spreads the cloth to the outer peripheral portions, causes the cloth to move down along the tank wall, and then collects it in the central portion.

(Hitachi, Description of the Invention, ¶ 5). The Hitachi teaches frictional contact between the cloth items and the impeller and it teaches inverse toroidal motion. Thus, by definition, according to Dr. Caligiuri's analysis, the Hitachi application must also impede angular movement and have relative angular motion.

Whirlpool's other expert, Duncan, agreed that the Hitachi application discloses a balancing of forces. (Duncan Dep. at 225). He also agreed that the Hitachi application discloses that cloth items "at the outer perimeter" are impeded. (Duncan Dep. at 211). Although Whirlpool attempts to minimize the significance of Duncan's admission by noting that he did not testify that clothes in the Hitachi application are impeded "in the drop zone," defined as the region beyond the outer perimeter of the impeller, such a fine distinction of location has little, if any, significance in the field of washing machines where the movement of the cloth items is somewhat chaotic or random.

The Court is satisfied that Defendants have shown by clear and convincing evidence that the plain meaning of the Hitachi application discloses the same structure, the same inverse toroidal cloth movement, and the same causes of inverse toroidal motion (impeller-cloth contact, engagement between impeller and cloth, water level relationship, and impeding action) as Whirlpool describes as its invention in the '722 patent. The patent examiner did not have an opportunity to consider the Hitachi application. The Court concludes that the '722 is invalid in light of the prior art disclosed by the Hitachi application.

B. DAEWOO

The Court is satisfied that the Hitachi application, standing alone, is prior art that is sufficient to defeat the validity of '722 patent. Nevertheless, the Court will also address the Defendants' additional claim that the '722 invention is invalidated by prior art reflected in a Daewoo washing machine.

The Daewoo DWF-1088PA washing machine was advertised for sale in national trade publications at least as early as 1997. (Def. Ex. 40). Whirlpool had access to the Daewoo machine and used it to prototype its '722 invention. (Pinkowski Dep. at 19-20; LaBelle Dep. at 154-55). The Daewoo machine is structurally identical to what Whirlpool illustrated as its invention in Figure 10 of the '722 patent. '722 patent, col. 10, lns. 42-44. Figure 10 contains all of the features of the Daewoo DWF-1088PA washing machine. Whirlpool did not bring the Daewoo machine to the examiner's attention.

The Daewoo machine that was examined for purposes of this litigation was a machine owned by Myeong-Ho Lowe, who operates Utopia Cleaners in Arlington, Massachusetts. Lowe offers his customers both dry cleaning and wet cleaning. Lowe has owned a Daewoo DW-1088PA machine since 1997, two years before the filing date of the '722 patent. Lowe used the Daewoo regularly for wet cleaning from 1997 until 2005, running between three to ten cycles a day. (Lowe Dep. at 12-13). Lowe testified that his Daewoo machine causes inverse toroidal movement and that it has worked this way since he purchased it. (Ex. 39, Lowe Dep. at 15-17). Lowe testified that he made no changes to the Daewoo washer other than replacing the drain pump. (Lowe Dep. at 13). From the time he purchased the Daewoo washer, the wash cycle operated in the same manner. "The clothes will come up in the center and move to the side, then it goes down and something comes up the center and moves this down to side." (Lowe Dep. at 15-16). When the clothes get to the wall of the wash basket they go to the bottom again. (Lowe Dep. at 17). Lowe observed this movement of the cloth items many times. (Lowe Dep. at 17).

Defendants' expert, Sundell, tested the Massachusetts Daewoo machine in both manual and automatic modes. The machine exhibited inverse toroidal movement in all 5 water level settings except high. (Sundell Supp. Rpt. at 55). When he placed his hand in the wash tub and held onto cloth items at the outside edge of the impeller, he was able to feel the impeller drag the cloth items inward. (Sundell Dep. at 56). Sundell's examination of another recently located sample of a Daewoo DWF-1088PA machine confirmed his opinion that the

Daewoo operated consistent with the recitations of the '722 patent. (Sundell Supp. Rpt. at 56).

Whirlpool's experts, Duncan and Caligiuri, did not personally inspect the Massachusetts Daewoo machine. (Duncan Dep. at 165-66). Nevertheless, after viewing the video footage of testing done by Whirlpool and by Sundell, both Duncan and Caligiuri acknowledged that the Massachusetts Daewoo machine did cause inverse toroidal movement. (Duncan Dep. 264, 267-68; Caligiuri Dep. at 142). Duncan testified, however, that he was unable to tell from the video footage whether the inverse toroidal movement in the Massachusetts Daewoo machine was caused by fluidic forces or by drag forces. (Duncan Dep. 264, 267-68).

The only Daewoo machine that Duncan physically examined was a Daewoo DWF-1088PA machine located in Kentucky. The Kentucky Daewoo machine automatically selected a higher water level per load size than the Massachusetts machine. Duncan did not observe inverse toroidal movement in the Kentucky Daewoo machine. He also concluded, after placing his hand in the wash tub during the wash cycle, that the machine used fluid forces rather than drag forces to move the clothes. (Duncan Supp. Rpt. at 23). Duncan acknowledged that the Kentucky machine appeared to have been manufactured after the year 2001 and accordingly did not constitute prior art. (Duncan Supp. Rpt., at 24-25).

Duncan discounted the evidence that the Massachusetts Daewoo machine caused inverse toroidal movement, based upon his conclusion that the controls of the machine must

have been substantially modified to select a lower water level than the machine was designed to select for the load. Duncan's conclusion is not supported by any evidence except his belief that it would be unreasonable for a machine to automatically select the same water level for a 6 pound load that it selected for an empty wash basket, and his understanding of the operation of the later-manufactured Daewoo machine in Kentucky.

Whirlpool has no evidence that the controls of the Massachusetts Daewoo machine have been altered to cause it to function like the '722 invention. Neither '722 patent inventor LaBelle nor any of the other Whirlpool representatives who physically examined the Massachusetts Daewoo machine offered any testimony or evidence that it had been altered. Mr. Lowe, the owner of the machine, testified that the controls of the machine were never changed. (Ex. 39 Lowe Dep. at 38). Whirlpool's assertion that the Massachusetts Daewoo machine has been altered is mere speculation and is not sufficient to create an issue of fact for trial.

The Daewoo machine includes the protrusions which Whirlpool described as one of the alternative structures for causing the claimed impeding function. Although Defendants' expert, Dr. Sundell, questions the '722 patent's description of the function of the protrusions, it is his opinion that the function served by the protrusions in the Daewoo machine is the same as the function of the protrusions illustrated and described in the '722 patent. (Sundell Supp. Rpt. at 55). Because the Daewoo machine has inverse toroidal movement by dragging and because it has the same protrusions that the '722 patent discloses as the means of

impeding the movement of the cloth items, those protrusions can be expected to achieve the same results in the Daewoo machine as in the '722 patent.

There are no material issues of fact concerning the operation of the Daewoo machine. The Daewoo machine incorporates all of the claims of the '722 patent and constitutes a second piece of invalidating prior art.

C. PATENT OFFICE CONSIDERED PRIOR ART

Finally, Whirlpool contends that although it did not disclose the Hitachi application or the Daewoo machine to the PTO, these two references are merely cumulative of the three prior art references that were considered by the PTO before allowing the '722 patent to issue.

Whirlpool disclosed six prior art references to the PTO in conjunction with its application for the '722 patent. '722 file history, at LGE000468. Whirlpool relies on three of these prior art references in support of its argument that the Hitachi application and Daewoo machine are merely cumulative of the prior art that was before the PTO. These three references are the Hayashi reference, U.S. Patent No. 4,494,390, the Kim reference, U.S. Patent No. 5,619,870, and a second Kim reference, U.S. Patent No. 5,638,704.

None of these three prior art references describe inverse toroidal movement by dragging using structure that corresponds to the '722 patent. For example, the Hayashi reference, U.S. Patent No. 4,494,390, recites that "the agitator 4 produces a stronger stream of water for pushing the clothes upwardly when it is rotated clockwise." '390 Patent, col. 3, ll. 57-59. The first Kim reference, U.S. Patent No. 5,619,870, uses a "pulsator having an

elevating member adapted to push up the washing articles by up-and-down motion" and "to generate up-and-down water flow." '870 patent, col. 1, ll. 57-59, 66-67. The second Kim reference, U.S. Patent No. 5,638,704, similarly describes a "pulsator having an elevating member adapted to push up the washing articles by up-and-down motion during the washing cycle" and "to generate up-and-down water flow." '704 patent, col. 1, ll. 56-58, 64-65.

In contrast to the three prior art references disclosed by Whirlpool, the Hitachi application and the Daewoo machine do describe inverse toroidal movement by dragging using a structure that corresponds to the '722 patent. Because the Hitachi application and the Daewoo machine differ materially from the disclosed prior art and mirror the disclosures of the '722 patent, they were not merely cumulative of the prior art that was disclosed. The Hitachi application and the Daewoo machine represent invalidating prior art that was not disclosed to the PTO before issuance of the '722 patent.

III.

In conclusion, the Court finds by clear and convincing evidence that Whirlpool's '722 patent is invalidated by the prior art. Accordingly, the Court will grant Defendants' motion for summary judgment as to invalidity of the '722 patent, and will deny Whirlpool's cross-motion for partial summary judgment as to validity of the '722 patent.

In light of this Court's previous order granting Defendants' motion for summary judgment of noninfringement as to the '666 patent, and the present determination that the

'722 patent is invalid, judgment will be entered in favor of Defendants as to all of Whirlpool's claims in this action.

An order and judgment consistent with this opinion will be entered.

Date: August 15, 2006

/s/ Robert Holmes Bell
ROBERT HOLMES BELL
CHIEF UNITED STATES DISTRICT JUDGE